

Oath

The Applicant will file a supplemental reissue declaration upon completion of prosecution and satisfaction of the Examiner's objections and/or rejections to the claims.

CONCLUSION

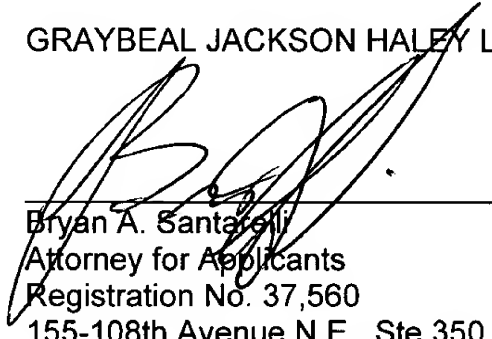
In light of the foregoing and in addition to the allowed claims 1-23, 28-33, 40-58, and 63-67, and claim 62 as amended, pending claims 1-23, 28-34, and 40-67 are in condition for full allowance, and that action is respectfully requested.

If the Examiner believes that a phone interview would be helpful, he is respectfully requested to contact the Applicants' attorney, Bryan Santarelli, at (425) 455-5575.

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Respectfully submitted,

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**ALL PENDING CLAIMS SHOWING MARKED-UP VERSION OF AMENDED
CLAIMS**

Marked-up version of claim 62:

Claims 1-23. See issued patent.

28. A method, comprising:
generating a first current that changes with temperature according to a first polarity;
generating a second current that changes with temperature according to a second polarity;
combining the first and second currents to generate a reference current; and
comparing the reference current to a third current that is dependent on a power-supply voltage.
29. The method of claim 28 wherein:
the first current changes with temperature according to a positive polarity; and
the second current changes with temperature according to a negative polarity.
30. The method of claim 28 wherein:
the first current is proportional to temperature; and
the second current is inversely proportional to temperature
31. The method of claim 28 wherein:
the first current increases as temperature increases and decreases as temperature decreases; and
the second current decreases as temperature increases and increases as temperature decreases.
32. The method of claim 28 wherein combining the first and second currents comprises summing the first and second currents.

33. The method of claim 28 wherein combining the first and second currents comprises sinking the first and second currents from a node.

34. The method of claim 28 wherein combining the first and second currents comprises sourcing the first and second currents to a node.

40. A method, comprising:
generating a first current that increases as temperature increases and that decreases as temperature decreases;
generating a second current that decreases as temperature increases and that increases as temperature decreases;
generating a third current that is dependent on a first voltage; and
combining the first, second, and third currents at a node to generate a second voltage on the node.

41. The method of claim 40 wherein combining the currents comprises:
sinking the first and second currents from the node; and
sourcing the third current to the node.

42. The method of claim 40 wherein:
the first current is related to a thermal voltage; and
the second current is related to a voltage across a forward-biased p-n junction.

43. The method of claim 40 wherein:
the first current is related to a thermal voltage; and
the second current is related to a base-emitter voltage of a bipolar transistor.

44. The method of claim 40 wherein the second current is related to the natural logarithm of a current through a bipolar transistor.

45. A method, comprising:
generating a first current that is related to temperature according to a first polarity;
generating a second current that is related to temperature according to a second polarity;
combining the first and second currents into a reference current;
generating a third current that is dependent on a first voltage; and
comparing the third current to the reference current.

46. The method of claim 45 wherein:
the first current is related to a thermal voltage;
the second current is related to a voltage across a forward-biased p-n junction;
and
the third current is dependent on a power-supply voltage.

47. The method of claim 45 wherein:
combining the first and second currents comprises sinking the first and second currents from a node; and
comparing the third current to the reference current comprises,
sourcing the third current to the node, and
comparing a second voltage on the node to a reference voltage.

48. A method, comprising:
generating a first current that is proportional to a threshold voltage of a field-effect transistor;
generating a second current that is proportional to a difference between a supply voltage and a threshold voltage of a second field-effect transistor;
generating a third current that is proportional to a base-emitter voltage of a first bipolar transistor;
generating a fourth current that is proportional to absolute temperature; and
driving a node with the first, second, third, and fourth currents.

49. The method of claim 48 wherein driving the node comprises:
sourcing the first and second currents to the node; and
sinking the third and fourth currents from the node.

50. The method of claim 48, further comprising comparing a voltage on the node with a reference voltage.

51. The method of claim 48 wherein the first field-effect transistor is matched to the second field-effect transistor.

52. The method of claim 48 wherein the threshold voltage of the first field-effect transistor is equal or approximately equal to the threshold voltage of the second field-effect transistor.

53. A method, comprising:
generating a first current that equals a product of a first constant and a threshold voltage of a first field-effect transistor;
generating a second current that equals a product of a second constant and a difference between a supply voltage and a threshold voltage of a second field-effect transistor;
generating a third current that equals a product of a third constant and a base-emitter voltage of a bipolar transistor;
generating a fourth current that equals a product of a fourth constant and a thermal voltage; and
driving a node with the first, second, third, and fourth currents.

54. The method of claim 53 wherein the first constant equals the second constant.

55. The method of claim 53 wherein driving the node comprises:
sourcing the first and second currents to the node; and
sinking the third and fourth currents from the node.

56. A method, comprising:
generating a first current that changes with temperature according to a first polarity;
generating a second current that changes with temperature according to a second polarity;
combining the first and second currents to generate a reference current; and
comparing the reference current to a third current that is proportional to a power-supply voltage

57. The method of claim 28 wherein comparing the reference current comprises summing the reference current and the third current at a node.

58. The method of claim 28 wherein comparing the reference current comprises:
sinking the reference current from a node; and
sourcing the third current to the node.

59. A method, comprising:
generating a reference current having a first temperature coefficient; and
comparing the reference current to a supply-related current that is related to a power-supply voltage and that has or has approximately the first temperature coefficient.

60. The method of claim 59 wherein the reference current is independent of the power-supply voltage.

61. The method of claim 59 wherein comparing the reference current comprises summing the reference current and the supply-related current at a node to generate a voltage.

62. (Amended) ~~The method of claim 59, further comprising:~~ A method, comprising:

generating a reference current having a first temperature coefficient;

comparing the reference current to a supply-related current that is related to a power-supply voltage and that has or has approximately the first temperature coefficient;

wherein comparing the reference current comprises summing the reference current and the supply-related current at a node to generate a voltage;

connecting the power-supply voltage to a load if the voltage is greater than a predetermined level; and

connecting a secondary supply to the load if the voltage is less than the predetermined level.

63. A method, comprising:

generating a first current that is related to temperature according to a first polarity;

generating a second current that is related to temperature according to a second polarity;

combining the first and second currents into a reference current;

generating a third current that is related to temperature according to the first polarity;

generating a fourth current that is related to a supply voltage and that is related to temperature according to the second polarity;

combining the third and fourth currents into a supply-related current; and

comparing the reference current to the supply-related current.

64. The method of claim 63 wherein the fourth current is proportional to the supply voltage.

65. The method of claim 63 wherein the supply-related current is proportional to the supply voltage.

66. The method of claim 63 wherein:

the first and third currents are inversely proportional to temperature; and
the second and fourth currents are proportional to temperature.

67. The direct current sum bandgap voltage comparator of claim 24 wherein
 $K_4 = K_1$.